Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims Listing

1. (Currently Amended) A method for detecting the presence of a target nucleic acid sequence in a sample, said method comprising:

(a) amplifying said target nucleic acid and introducing a purine rich region into the target sequence during the amplification, wherein the resulting target sequence is able to bind a peptide nucleic acid, and contacting the sample during the amplification with a peptide nucleic acid able to bind at least a portion of the target sequence, wherein the portion comprises ~~comprising~~ the purine rich region introduced during amplification; and

(b) detecting the presence of triplex structures resulting from the binding of the amplified target sequence to the peptide nucleic acid,

wherein the detection of the presence of triplex structures indicates the presence of target nucleic acid sequences in the sample.

2. (Original) A method according to claim 1 wherein the peptide nucleic acid is bis-PNA.

3-4. (Cancelled).

5. (Original) A method according to claim 1 wherein the amplification reaction is a polymerase chain reaction.

6. (Currently Amended) A method for detecting the presence of a target nucleic acid sequence that contains a purine rich region in the sequence, said method comprising:

(a) amplifying said target nucleic acid so that the product of the amplification reaction includes the purine rich region, wherein the resulting target sequence is

able to bind a peptide nucleic acid, and contacting the sample during the amplification with a peptide nucleic acid able to bind at least a portion of said target sequence, wherein the portion comprises ~~comprising~~ the purine rich region included in the product of the amplification reaction; and

(b) detecting the presence of triplex structures formed by the product of the amplification reaction and the peptide nucleic acid,

wherein the detection of the presence of triplex structures indicates the presence of target nucleic acid sequences in the sample.

7. (Canceled).

8. (Previously Presented) A method according to claim 1 wherein primers used in the amplification comprise a plurality of pyrimidines at the 5' end thereof.

9. (Original) A method according to claim 1 wherein the peptide nucleic acid is immobilized on a support.

10. (Original) A method according to claim 9 wherein the support is a waveguide of a detection device.

11. (Original) A method according to claim 10 wherein the detection device is a surface plasmon resonance detector.

12. (Original) A method according to claim 1 wherein the triplex structure is detected by a gel retardation method.

13-17. (Canceled).

18. (Currently Amended) A method for detecting the presence of a target nucleic acid sequence in a sample, comprising

(a) amplifying the target nucleic acid so that the product of the amplification reaction includes a purine rich region, and during the amplification reaction, contacting the sample with a waveguide of an evanescent waveguide detector on which is immobilized a peptide nucleic acid able to bind at least a portion of the target sequence, wherein the portion comprises ~~comprising~~ the purine rich region included in the product of the amplification reaction; and

(b) detecting the presence of triplex structures formed by the product of the amplification reaction and the peptide nucleic acid on the waveguide using the detector.

19. (Previously Presented) The method of claim 18 wherein the evanescent waveguide detector is a surface plasmon resonance detector.

20-21. (Cancelled).

22. (Previously Presented) The method of claim 6 wherein the amplification reaction is a polymerase chain reaction.

23. (Previously Presented) The method of claim 6 wherein the peptide nucleic acid is immobilized on a support.

24. (Previously Presented) The method of claim 6 wherein the triplex structure is detected by a gel retardation method.

25. (Currently Amended) A kit for detecting the presence of a target nucleic acid sequence in a sample, wherein the kit comprises:

a) a bis-peptide nucleic acid (PNA) having a sequence that is specific for the target nucleotide sequence, wherein the target nucleotide sequence contains a purine rich

region that has been introduced into the target sequence during amplification, and wherein the bis-PNA is immobilized on a waveguide of an evanescent wave detector apparatus and can form a PNA_2DNA triplex structure with the purine rich region introduced into the target nucleotide sequence during amplification of the target nucleotide sequence; and,

b) a set of amplification primers that can amplify in the presence of the bis-PNA a sequence comprising the target sequence.

26. (Previously Presented) The kit of Claim 25, wherein the evanescent wave detector apparatus is a surface plasmon resonance detector.